

Exploring Agad Tantra Approaches to Lifestyle Disorders: A Study on PCOD w.s.r to Endocrine Disruptors and Thyroid Dysfunction

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Abstract:

Chemical exposures contribute significantly to the development of lifestyle disorders—including metabolic, hepatic, neurological, and oxidative stress-related conditions. Agadtantra, the Ayurvedic paradigm of toxicology, provides conceptual and therapeutic approaches aimed at detoxification and systemic rejuvenation. This narrative review critically appraises published evidence on *Tinospora cordifolia* and related Ayurvedic interventions in countering chemically induced lifestyle disorders. The findings suggest promising antioxidant, hepatoprotective, neuroprotective, immunomodulatory, and metabolic benefits, but also highlight the need for rigorous safety assessments due to concerns such as heavy metal contamination and herb-induced hepatotoxicity.

Introduction: Noncommunicable diseases (NCDs), commonly known as chronic or lifestyle-related diseases, are diseases that are not infectious to others. NCDs tend to be of long duration and are the result of a combination of genetic, physiological, environmental and behavioural factors⁽¹⁾. Polycystic ovarian syndrome (PCOS) – a life style disease is the most common endocrine disorder among females of reproductive age worldwide. It is a hormonal disorder that can be influenced by lifestyle factors like diet, exercise, and weight management. While genetics play a role, lifestyle choices can significantly impact the development and management of PCOS.

Endocrine disruptors (EDs) are chemicals found in everyday products like plastics, pesticides, and personal care items that mimic or interfere with the body's hormonal system. They can disrupt hormone synthesis, transport, metabolism, and action, affecting key systems like the hypothalamic-pituitary-thyroid (HPT) and hypothalamic-pituitary-ovarian (HPO) axis—contributing to conditions such as hypothyroidism and PCOS. EDs can also bioaccumulate and bio-magnify in the food chain, posing significant risks to human health.

The concepts of bioaccumulation and biomagnification can be correlated with the Ayurvedic terms Gara Visha, Dushi Visha, Garajanya- dushivisha. According to the Acharyas, Dushi Visha refers to toxins that are less potent (Guna-hina

Visha), while Gara Visha is associated with toxins that have not undergone proper transformation (Avipaki Guna of Visha). In this context, modern toxicological phenomena such as endocrine-disrupting chemicals (EDCs), bioaccumulation, and biomagnification can be understood through the lens of these traditional concepts. This paper explores how Agad tantra principles, can provide a viable solution to the emerging public health challenge posed by endocrine disruptors. By integrating ancient principles and herbal remedies with modern scientific understanding.

Aim: To explore the potential of Agad tantra principles, in addressing life style disorders (like PCOD) posed by endocrine disruptors (EDCs) Thyroid dysfunction.

Objective: 1. Comprehending EDCs and their connection to PCOS

2. Exploring EDC & PCOS through Agad tantra concepts (Garajanya Dooshivisha)

3. Evaluating Efficacy of Agad yogas in EDC and PCOS

Material And Methods:

Literature Review: This literature review examines existing research on endocrine disruptors, their impact on human health via life styles disorder like PCOS, and the potential of Agad tantra, as a solution to understand and counter their adverse effects.

1. Comprehending EDCs and their connection to PCOS:

Endocrine disruptors (EDs) have emerged as a significant public health concern in recent years due to their widespread presence in industrial products, everyday consumer goods, and the environment. These chemicals interfere with the body endocrine system, mimicking or blocking hormones, which can lead to long-term health effects. By interfering with receptor binding, steroidogenesis and metabolism of hormones, EDC's have been shown to result in morphological and functional alterations of the female reproductive system which can result in infertility, irregular menstrual cycles, endometriosis, uterine fibroids, precocious puberty or premature ovarian insufficiency (POI), gynecological cancers and polycystic ovary syndrome (PCOS)⁽²⁻⁷⁾.

The pathophysiology of this endocrinopathy still remains

unclear. However, recently it has become increasingly apparent that genetic, epigenetic, endocrine, metabolic as well environmental factors may all contribute to the development of this disorder. Regarding hormonal and metabolic abnormalities of women diagnosed with PCOS, EDCs in the environment may be particularly relevant to consider⁽⁸⁻¹⁰⁾.

Exposure to EDCs, toxins like heavy metals and perchlorates can disrupt thyroid function by suppressing the conversion of T4 to T3, leading to hypothyroidism. This can slow down metabolism, contributing to weight gain and obesity. Furthermore, low thyroid function can elevate prolactin levels, exacerbating symptoms of PCOS. Few examples of EDCs with their effect and source are given in Table 1.

TABLE 1: Common EDCs associated with PCOS⁽¹¹⁾.

Name of EDC	Source	Effect	Probable mechanism
Bisphenol A (BPA)	Perfumes plastics, food packaging, and certain dental products	Increase the risk of PCOS by affecting hormone levels, insulin sensitivity, and potentially leading to hyperandrogenism	It can act as a weak estrogen mimicker, potentially disrupting the hormonal balance in the body
Phthalates	Found in cosmetics, toiletries, food packaging, and some medical devices	Disrupt the hypothalamic-pituitary-gonadal axis, which regulates hormone production, and may contribute to insulin resistance and other PCOS-related features	Act as anti-androgens, meaning they can interfere with the action of male hormones like testosterone
Pesticides	Commonly found in food, water, and personal care products	effects on hormone levels, insulin sensitivity, and ovarian function	Mimic estrogen or interfere with hormone pathways, potentially disrupting the endocrine system
Parabens	Preservatives in cosmetics and skincare	Ovarian cancer and female infertility	Mimic estrogen
Benzophenones	Lip balms and nail varnishes	Unusual vaginal bleeding resulting infertility	Increases progesterone

2. Exploring EDC & PCOS through Agad tantra concepts (Garajanya Dooshivisha):

Gara Visha refers to artificial or accumulated toxins formed from non-poisonous substances, commonly found in modern products like cosmetics, food additives, pesticides, and

certain medicines. These toxins disrupt bodily functions such as digestion, metabolism, and reproduction. The Ayurvedic concept aligns with modern concerns about endocrine-disrupting chemicals (EDCs). Common features of Gara visha & PCOS are given in Table 2.

TABLE 2 : Common Features of Gara visha⁽¹²⁾ PCOS

Symptoms of Garavisha	Symptoms in PCOS
Pratiloma of vayu	Gastritis Dysmenorrhea
Maha Udara	Increased waist circumference, apple type body
Maha yakrit	Dyslipidemia/Obesity / fatty infiltration of liver
Shopha	edema -inflammatory changes in ovary, chocolate cyst
Durbala	Exhaustion on mild exertion
Kshaya	Dhatu kshaya leading to hairfall, oligomenorrhea, anovulation etc.

Dushi Visha (latent poison), as described by Charaka, Sushruta, and Madhava Nidana, is a low- potency toxin that remains dormant in the body, vitiating tissues (Rasa, Rakta, etc.) and leading to chronic disorders like skin diseases, PCOS, menstrual irregularities, and even impotence. It is

aggravated by factors like cold wind and cloudy weather, which increase Kapha, causing toxin concealment (Avrita), digestive weakness (Agni Mandya), and poor metabolism (Dhatwagni Mandya). Common features of lakshanas & Upadrava of Dushivisha with PCOS are given in Table 3.

TABLE 3: Common Features of Lakshana⁽¹³⁾ Upadrava⁽¹⁴⁾ of Dushivisha with PCOS

Symptoms of Garavisha	Symptoms in PCOS
Viloonpakshastu yatha vihangha	Hairloss
Aanaha	Abdominal distension
Shukra samkshaya	oligomenorrhea, anovulation ovary, chocolate cyst
Shopha	edema -inflammatory changes in ovary, chocolate cyst
Unmada	Mood swings

Garajanya-Dushivisha:

Frequent exposure to EDCs found in cosmetics and heavy metals is considered a form of Gara Visha—representing the cumulative toxicity. Over time, these toxins accumulate in the body and, when the environment becomes conducive, begin to impact specific bodily systems, manifesting as Dushi Visha with corresponding symptoms. This transformation is driven by properties such as Apaaki Guna (indigestibility), Dhatu Leenata (deep tissue lodging), and Kapha Avarana (concealment by Kapha). In this context, the causative factors (Nidana) act as Gara Visha, while the resulting symptoms reflect Dushi Visha. Thus, the disease process can be interpreted through the lens of Garajanya-Dushivisha—a progression from artificial toxin exposure to latent poisoning and disease manifestation.

Evaluating Efficacy of Agad yogas in EDC and PCOS:

In Ayurveda formulations such as Pushyanuga churna etc have been used in PCOS patients which comes under symptomatic treatment (linga aushandham). Chronic involvement of Garjanya-Dushi visha, EDCs result in further worsening of PCOS symptoms. To combat this chronic effect Dushivishari agada ⁽¹⁵⁾ can be given internally with kanji, hinguvachadi churna & other suitable anupana. The role of anupana is elimination of pitta and kapha from body via lekshana karma. Agada prayoga is done as hethuviparitaushada. As per the tara-tama bhava of roga, Murvadi agada [16] can be used for addressing agni and ama, other Agad Yogas like Bilvadi agada can be used. Acharya Vagbhata in Uttartantra Keetalutadi Visha Pratishedha Adhayay states that all visha treatment should end up in shodhana. In Sarpavish Pratishedha Adhyaya he states that even after treatment some part of visha stays in body and which with time further emerges as dushi visha. As Charaka describes laghu guna of visha as durupkramya -this alongwith apaki guna makes it difficult for elimination from body which in turn produces dushivisha, shodhana (detoxification) is indicated along with Agad Prayogas. Ghritas such as Kalyanak ghrita ⁽¹⁷⁾ mentioned in Kalpasthana of Sushruta Samhita can be used for shodhana to bring accumulated dosha from shakha to koshta. The ingredients of Agad yogas possess antioxidant, anti-inflammatory, and hormone-modulating properties. These are effective in mitigating tissue repair, oxidative stress, improving insulin sensitivity, and regulating hormonal imbalances. In nutshell Agad yogas focuses on Hetuviparita chikitsa which aids the symptomatic relief in shorter duration.

Conclusion:

The concept of Garajanya Dushivisha in Agad Tantra aligns with the role of endocrine- disrupting chemicals (EDCs) in the development and progression of conditions like PCOS. Traditional Agad formulations such as Dushivishari Agada,

Murvadi Agada, and Kalyanaka Ghrita may offer detoxifying and neutralizing effects against EDCs. Incorporating these Agad -based principles into public health strategies could improve prevention and management of lifestyle disorders linked to EDC exposure, including PCOS and thyroid imbalances. To fully realize this potential, further interdisciplinary research is essential to connect traditional Ayurvedic knowledge with modern environmental toxicology.

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